AMENDMENTS
In the Claims

Current Status of Claims

1.(**currently amended**) A method for frame multi-resolution analysis implemented on a computer comprising the steps of:

constructing isotropic, non-separable ideal windows in a dimension greater than ~~or equal to~~ 1;

~~constructing translation and dilation operators for~~ translating and dilating the ideal windows using translation and dilation operators;

constructing isotropic, non-separable filters from the ideal windows of the previous step, ~~the translation operators and the dilation operators~~, where the filters are selected from the group consisting of isotropic, non-separable low pass filters, isotropic, non-separable high pass filters and isotropic, non-separable filters that cover a desired frequency range or plurality of desired frequency ranges;

constructing isotropic, non-separable frame scaling functions ~~and associated translation operators for use with the isotropic, non-separable scaling functions~~; and

producing associated isotropic, non-separable wavelets from the isotropic, non-separable filters and the isotropic, non-separable scaling functions, where the wavelets and filters are adapted to resolve or decompose ~~a~~ multidimensional signals, data, information, or images into a plurality of non-overlapping ~~subsets~~ sub-bands corresponding to ~~or~~ resolution levels improving analysis efficiency and improving analysis of more complex multidimensional signals, data, information or images.

2.(**previously presented**) The method of claim 1, further comprising the step of:

dividing each filter into at least one relative low pass component and at least one relative high pass components.

3.(**currently amended**) The method of claim 1, wherein the multidimensional signal is: a streaming video signal, a seismic imaging signal, a digital medical imaging signal, a satellite imaging signal, a surveillance imaging signal, a target acquisition imaging signal, a radar imaging signal, or a sonar imaging signal, ~~or a pattern recognition imaging signal~~.

4.(**currently amended**) A method for analyzing data implemented on a computer comprising the steps of:

constructing at least one isotropic, non-separable wavelet including:

isotropic, non-separable filters having at least one ideal isotropic, non-separable window ~~and necessary~~ translated and dilated as necessary using translation and dilation operators, where the filters are selected from the group consisting of isotropic, non-separable low pass ~~isotropic, non-separable~~ filters, isotropic, non-separable high pass ~~isotropic, non-separable~~ filters and isotropic, non-separable filters that cover a desired frequency range or plurality of desired frequency ranges;

isotropic frame scaling functions where translations of the frame scaling functions form a frame ~~and associated translation operators for use with the scaling functions~~; and

resolving or decomposing ~~a~~ multidimensional signals, data, information, or images into a plurality of non-overlapping ~~subsets or~~ sub-bands corresponding to resolution levels with the at least one isotropic, non-separable wavelet improving analysis efficiency and improving analysis of more complex multidimensional signals, data, information or images.

5.(**previously presented**) The method of claim 4, further comprising the step of:

dividing each isotropic, non-separable filter into at least one relative low pass isotropic, non-separable component and at least one relative high pass isotropic, non-separable component~~s~~.

6.(**previously presented**) The method of claim 4, wherein the multidimensional signal is: a streaming video signal, a seismic imaging signal, a digital medical imaging signal, a satellite imaging signal, a surveillance imaging signal, a target acquisition imaging signal, a radar imaging signal, a sonar imaging signal, or a pattern recognition imaging signal.

7.(**currently amended**) A system for processing signals implemented on a computer comprising:

a processing unit having encoded thereon a completely isotropic, non-separable ideal filter

for frame multi-resolution analysis software including:

wavelets adapted to resolve a multidimensional signal into various resolution levels, where the wavelets are derived from:

isotropic, non-separable ideal windows or filters in a dimension greater than ~~or equal to~~ 1,

~~translation and dilation constructs or operators adapted to form completely~~ isotropic, non-separable low pass filters, isotropic, non-separable high pass filters and isotropic, non-separable filters that cover a desired frequency range or plurality of frequency ranges ~~from the isotropic ideal windows into~~; and

isotropic, non-separable frame scaling functions where translations of the frame scaling functions form a frame ~~and associated translation operators for use with the scaling functions~~;

where the system resolves or decomposes multidimensional signals, data, information, or images into a plurality of non-overlapping sub-bands sets or resolution levels with the at least one isotropic, non-separable wavelet improving analysis efficiency and improving analysis of more complex multidimensional signals, data, information or images.

8.(**previously presented**) The system of claim 7, wherein each isotropic, non-separable high pass and each isotropic, non-separable low pass filter comprise:

at least one isotropic, non-separable relative low pass component and at least one isotropic, non-separable relative high pass component.

9.(**previously presented**) The system of claim 8, wherein each isotropic, non-separable relative high pass component and each isotropic, non-separable relative low pass filter comprise:

at least one isotropic, non-separable relative low pass subcomponent and at least one isotropic, non-separable relative high pass subcomponent.

10.(**previously presented**) The system of claim 7, wherein each isotropic, non-separable high pass and each isotropic, non-separable low pass filter comprise:

a plurality of isotropic, non-separable high pass and isotropic, non-separable low pass

components, each component including at least one isotropic, non-separable relative low pass subcomponent and at least one isotropic, non-separable relative high pass subcomponent.

11.**(previously presented)** A completely isotropic, intrinsically non-separable low pass filter or high pass filter implemented on a computer comprising:

isotropic, non-separable ideal windows in a dimension greater than or equal to 1, and

translation and dilation operators adapted to form out of the ideal windows completely isotropic, non-separable low pass filters, isotropic, non-separable high pass filters and isotropic, non-separable filters that cover a desired frequency range or plurality of frequency ranges from the isotropic ideal filters.

12.**(previously presented)** The filter of claim 11, wherein the isotropic, non-separable low pass filter comprises:

$$m_0(\xi) = \sqrt{2}\,\chi_{D1\sqrt{2}}(\xi),\ \xi \in \mathrm{T}^2$$

13.**(previously presented)** A completely isotropic, intrinsically non-separable scaling function implemented on a computer comprising:

$$\phi = F^{-1}(\chi_D)$$

14.**(currently amended)** An isotropic, non-separable wavelet scaling function implemented on a computer comprising:

$$\phi(R) = \frac{J_{n/2}(\pi R)}{(2R)^{n/2}},\quad R > 0$$

15.**(currently amended)** An isotropic, non-separable wavelet implemented on a computer comprising:

at least one isotropic, non-separable filter including at least one isotropic, non-separable ideal window and translation and dilation operators, where the filters are selected from the group consisting of isotropic, non-separable low pass filters, isotropic, non-separable high pass filters and isotropic, non-separable filters that cover a desired frequency range or plurality of frequency ranges;

and

~~constructing~~ isotropic frame scaling functions, where translations of the frame scaling functions form a frame ~~and associated translation operators for use with the scaling functions~~.

16.(**currently amended**) The wavelet of claim 15, wherein the wavelet further comprises:

$$h_r = e_{q_r} \chi_Q \qquad r \in \{0,1,\ldots, p-1\}$$

where $\{e_{A(\mathbf{k})} h_r : \mathbf{k} \in \mathbf{Z}^n, r = 0,1,\ldots,p-1\}$ is $\tilde{W}_{-1}$ 'arseval frame

$\{T_{A(\mathbf{k})} F^{-1} h_r : \mathbf{k} \in \mathbf{Z}^n, r = 0,1,\ldots,p-1\}$ is a Parseval frame for W_{-1}, $\psi_r = D\tilde{J}^{-1} I$

$\{T_{\mathbf{k}}\psi_r : \mathbf{k} \in Z^n, r = 0, 1,\ldots, p\text{-}1\}$ is a Parseval frame for W_0, and $\{\psi_r : r = 0, 1,\ldots, p\text{-}1\}$ is a Parseval frame multiwavelet set associated with the FMRA $\{V_j\}_j$.

17.(**currently amended**) The method of claim 1, further comprising the step of:

decomposing ~~the~~ a multidimensional signal, data set, information, or image into a plurality of non-overlapping subsets or resolution levels using ~~an equal~~ a plurality of isotropic, non-separable wavelets derived from the isotropic, non-separable filters and the isotropic, non-separable scaling functions.

18.(**currently amended**) The method of claim 17, further comprising the step of:

~~reconstructing~~ forming a reconstructed multidimensional signal, data set, information, or image from the plurality of non-overlapping subsets or resolution levels, where the reconstructed multidimensional signal, data set, information, or image has enhanced boundary properties and has reduced noise.

19.(**new**) The method of claim 1, wherein the number of dimensions is greater than or equal to 2.

20.(**new**) The method of claim 1, wherein the number of dimensions is greater than or equal to 3.

21.(**new**) The method of claim 4, wherein the number of dimensions is greater than or equal to 2.

22.(**new**) The method of claim 4, wherein the number of dimensions is greater than or equal to 3.

23.(**new**) The method of claim 7, wherein the number of dimensions is greater than or equal to 2.

24.(**new**) The method of claim 7, wherein the number of dimensions is greater than or equal to 3.